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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,907	09/17/2003	Ying Tat Leung	YOR920030350 (00280746AA)	2648

30743 7590 03/30/2007	EXAMINER	
WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C. 11491 SUNSET HILLS ROAD SUITE 340 RESTON, VA 20190	CHEN, TE Y	
	ART UNIT	PAPER NUMBER
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SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

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PTOL-90A (Rev. 10/06)

	Application No.	Applicant(s)
Office Action Summary	10/663,907	LEUNG ET AL.
	Examiner	Art Unit	
	Susan Y. Chen	2161	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 February 2007*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

Response to Amendment

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set

forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set

forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on Feb 13,

2007 has been entered.

Claims 1-10 are pending for examination. Claims 1-3 and 6-8 have been

amended.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly
claiming the subject matter which the applicant regards as his invention.

Claims 1 -10, are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

As to claims 1 and 6, applicant fails to define the metes and bounds of claimed

"each component in the equipments" (i.e., does it referred to a software component or

hardware component or both?), thus, it renders the claims as indefinite.

As to claims 2-5 and 7-10, these claims have the same defects as their base

claims, hence are rejected for the same reason.

Because the ambiguous nature of instant invention, the following art rejection is

as to the best of the examiner ascertain.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by
another filed in the United States before the invention by the applicant for patent or (2) a patent
granted on an application for patent by another filed in the United States before the invention by the
applicant for patent, except that an international application filed under the treaty defined in section
351(a) shall have the effects for purposes of this subsection of an application filed in the United States
only if the international application designated the United States and was published under Article 21(2)
of such treaty in the English language.

Claims 1-10, are rejected under 35 U.S.C. 102(e) as being anticipated by U.S.

Publication No. 2004/0250166 issued to Dahlquist et al. (hereinafter referred as

Dahlquist).

Claim 1:

Dahlquist discloses the method to diagnose equipment failures using an

integrated approach of case-based reasoning and reliability analysis [e.g., Abstract,

Fig(s) 1-7 and associated texts], comprising the steps of:

maintaining a case base database for the equipment [e.g., the units: 31, 35 of

Fig. 2; 24, Fig. 3 and 24, Fig. 4 and associated texts];

receiving an equipment problem description from a user [e.g., the units: 22, 23,

25, etc, Fig. 3 and associated texts; page 2, the sections: 0027-0031 & page 4, sections

0050-0052];

for each component in the equipment, calculating failure probability based on at

least one of historical failure and published failure data of the components [e.g., the use

of analyzer function to analysis any component of the processing and calculating the

component failure probability via probabilistic methods over simulated data & Historical

Plant data stored on case based Reasoning searching failure library (e.g., Fig. 2) at

page 2, Sections: 0029-0031, Page 4, sections 0053-0055];

for each component, calculating probability of matching problem description

assuming that a component fails, using case based reasoning [e.g., the case based

reasoning unit 35 of Fig. 2 , and the unit 35 of Fig. 5 and associated texts & Page 4,

section 0056];

for each component, combining the calculated probabilities to compute an overall

failure probability given the historical failure data and published data and the problem

description problem description [e.g., page 2, Sections: 0029-0031, Page 4, sections

0053-0057, Fig(s) 2-4 and associated texts]; and

composing a list of component recommendations by ranking components by their

overall failure probabilities and retrieving corresponding past solutions from the case

base database [e.g., Page 1, sections: 0005- 0012 & Page 4, section 0053, Fig. 6 and

associated texts].

Claim 2:

In addition to the features recited in claim 1, Dahlquist further discloses that the

step of producing a single list of suggested failed components based on historical failure

data and published failure data as observed by the equipment user, and the problem

description received from the user [e.g., Fig. 6 and associated texts & Page 6, section

0076].

Claim 3:

In addition to the features recited in claim 1, Dahlquist further discloses that the

step of producing a list of probabilities of failure corresponding to the list of suggested

failed components, with the probabilities estimated from historical failure data and

published failure data, as observed by the equipment user, and the problem description

received from the user [e.g., Fig. (s) 2 & 6 and associated texts].

Claim 4:

In addition to the features recited in claim 1, Dahlquist further discloses that the

step of combining probabilities to compute the overall failure probability for each

component uses an equipment hierarchy such that component failure probabilities are

estimated in a hierarchical manner, calculated from data for the equipment at hand, if

there is adequate data, otherwise, from data from an equipment group one level up in

the hierarchy, and repeating the process until adequate data is found [e.g., Page 6,

sections: 0082-0087 & the top-down plant hierarchy by case based reasoning for fault

detection, or the vertical down-up plant hierarchy by Bayesian inference for root cause

analyzing of Fig(s). 5-7 and associated texts].

Claim 5:

In addition to the features recited in claim 1, Dahlquist further discloses that the

step of combining probabilities to compute overall failure probability uses an equipment

hierarchy such that historical cases are retrieved in a hierarchical manner, from data for

the equipment at hand, if there is adequate data, otherwise, from data from an

equipment group one level up in the hierarchy, and repeating the process until adequate

data is found [e.g., Page 4, sections: 0054-0055, Page 5, sections: 0063-0065, Page 6,

sections: 0082-0083 & Fig(s). 4-7 and associated texts].

Claim 6:

Dahlquist discloses a decision support system to diagnose equipment failures

using an integrated approach of case-based reasoning and reliability analysis [e.g.,

Abstract, Fig(s) 1-7 and associated texts], comprising:

a case base maintenance management system database for the equipment; a

decision support system database [e.g., the unit: 31, Fig. 2; 24, Fig. 3 and 24, Fig. 4 and

associated texts];

a decision support system client for receiving an equipment problem description

from a user [e.g., the units: 22, 23, 25, etc, Fig. 3 and associated texts; page 2, the

sections: 0027-0031 & page 4, sections 0050-0052];

a decision support system server receiving input from the decision support

system client and accessing said case base maintenance management system

database and said decision support system database, said decision support system

server including [e.g., Fig. (s) 2-7 and associated texts]:

a real-time decision support system engine for calculating failure

probability for each component in the equipment, based on historical failure data

and published failure data of each of the component, using reliability theory, and

for calculating probability of matching problem description for each component,

assuming that a component fails, using case based reasoning, and for each

component, combining the calculated the calculated probabilities to compute the

overall failure probability for each component given the historical failure data and

published failure data of each of the component and the equipment problem

description and composing a list of component recommendations by ranking

components by their overall failure probabilities and retrieving corresponding past

solutions from the case base maintenance management system database [e.g.,

Page 5, section 0070 - page 6, section 0076 & Fig.(s) 3-6 and associated texts];

and

a case base update processor for copying closed failure transaction

records from the case base maintenance management systems database, and

extracting the information from these transaction records to obtain the attributes

required by said real-time decision support system engine, and indexing each

transaction record by the failed component identification and the number of

occurrence of failure of that particular component [e.g., the database 24 real-time

updating at Page 5, section 0070-0071, the diagnostics data extracting at Page

5, sections: 0063-0065, the hierarchical indices of the case based decision

control system (DCS) at Page 6, sections: 0079-0085 & the ranking, propagating

and replacing "the malfunctioning pump with a new one technique" of the

decision support tool at Page 7, section 0091-0095, Fig.(s) 2-7 and associated

texts].

Claim 7:

In addition to the features recited in claim 6, Dahlquist further discloses that the

decision support system server produces a single list of suggested failed components

based on historical failure data and published failure data of each of the components as

observed by the equipment user, and the problem description received from the user

[e.g., Fig. 6 and associated texts & Page 6, section 0076].

Claim 8:

In addition to the features recited in claim 6, Dahlquist further discloses that the

decision support system server produces a list of probabilities of failure corresponding

to the list of suggested failed components, with the probabilities estimated from

historical failure data and published failure data of each of the components as observed

by the equipment user, and the problem description received from the user [e.g., Fig. (s)

2 & 6 and associated texts].

Claim 9:

In addition to the features recited in claim 6, Dahlquist further discloses that the

decision support system server combines the probability of matching the equipment

problem description for each component to compute the overall failure probability for

each component using an equipment hierarchy such that the overall failure probability

for each component is estimated in a hierarchical manner, calculated from data for the

equipment at hand, if there is adequate data, otherwise, from data from an equipment

group one level up in the hierarchy, and repeats the process until adequate data is

found [e.g., Page 6, sections: 0082-0087 & the top-down plant hierarchy by case based

reasoning for fault detection, or the down-up plant hierarchy by Bayesian inference for

root cause analyzing of Fig(s). 5-7 and associated texts].

Claim 10:

In addition to the features recited in claim 6, Dahlquist further discloses that the

decision support system server combines the probability of matching the equipment

problem description for each of the components to compute the overall failure

probability for each component using an equipment hierarchy such that historical cases

are retrieved in a hierarchical manner, from data for the equipment at hand, if there is

adequate data, otherwise, from data from an equipment group one level up in the

hierarchy, and repeats the process until adequate data is found [e.g., Page 4, sections:

0054-0055, Page 5, sections: 0063-0065, Page 6, sections: 0082-0083 & Fig(s). 4-7

and associated texts].

Response to Arguments

Applicant's arguments filed on Feb. 13, 2007 have been fully considered but they

are not persuasive.

The examiner disagrees with applicant's arguments and piece-meal

interpretation under the 35 U.S.C. 102(b) rejections, that are summarized as following:

1) Both claims 1 and 6 requires the use of case-based reasoning and reliability

analysis in an integrated fashion. Dahlquist wholly lacks the feature of application of

case based reasoning and analysis of historical failure data and published data in an

integrated fashion to composing a list of component recommendations ranked by their

overall failure probabilities.

In response to the above arguments, the examiner first points out that MPEP §

2106 requires Office personnel are to give claims their broadest reasonable

interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55,

44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). The examiner notes that applicant fails to

define the metes and bounds of claimed "each component in the equipments",

"published failure data" and "problem description", as such, the claimed limitations are

open for reasonable art interpretation.

Furthermore, Dahlquist clearly disclosed the use of case-based reasoning [e.g.,

the unit 35, Fig(s). 2&5 and associated texts] and reliability analysis [e.g., the unit 25,

Fig(s). 2-3 and associated texts] in an integrated fashion to composing a list of

component recommendations ranked by their overall failure probabilities [e.g., The

Integration of the results of the analysis with the maintenance system and equipment

data as recited in Sections: 0005-0012]. Thereby, in contrary to applicant's arguments,

Dahlquist clearly anticipates the claimed limitations recited in claims 1 and 6.

In response to applicant's arguments with respect to the limitations of claims 4

and 9 that the references fail to show certain features of applicant's invention, it is noted

that the features upon which applicant relies (i.e., the hierarchy is only exercised if

insufficient data is found at the lowest level of the hierarchy) are not recited in the

rejected claim(s). Although the claims are interpreted in light of the specification,

limitations from the specification are not read into the claims. See In re Van Geuns, 988

F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Moreover, even they were recited in

these claims, they are met by the on-line decision support "root cause" analyzing tool of

Dahlquist, wherein each component of a causality network is organized in hierarchical

level for dynamically populating associated equipment components if insufficient data is

found at the lowest component level based on the conditional probabilities modeled by

cause-effect relations of the Bayesian network, such that the tool can be activated by an

operator only when the operator desires to perform "root cause" effective analysis to

follow each causality chained up to the component level in order to find the root cause,

wherein, the uncertainties caused in the root analysis, are definitely taken into account, for example, by information signals from other sources not associated with the malfunction via the case reasoning function [e.g., Fig. 7 and associated texts of Dahlquist].

As to the rest of arguments applicant merely rehashes issued already addressed on record, thus, based on the discussion above, the rejections on record are maintained.

Conclusion

To expedite the process of re-examination, the examiner requests that all future correspondences in regard to overcoming prior art rejections or other issues (e.g. 35 U.S.C. 112) set forth by the Examiner prior to the office action, that applicant should provide and link to the most specific page and line numbers of the disclosure where best support is found (see 35 U.S.C. 132).

Points of Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan Y. Chen whose telephone number is 571-272-4016. The examiner can normally be reached on Monday - Friday from 7:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Mofiz Apu can be reached on 571-272-4080. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Susan Y Chen
Examiner
Art Unit 2161

March 26, 2007